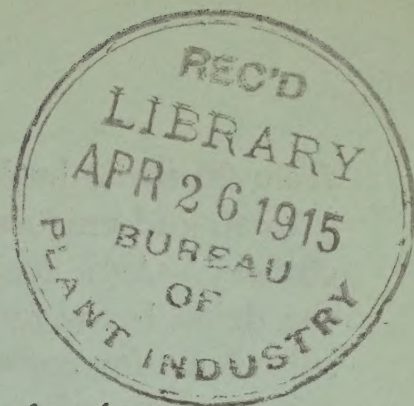


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United States Department of Agriculture,

BUREAU OF PLANT INDUSTRY,

Forage-Crop Investigations,

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SOY BEAN (*Soja max*).

The soy bean, called also soja bean, Manchurian bean, and stock pea (eastern North Carolina), is an erect, rather hairy, leguminous plant. It is grown extensively in China and Japan, principally as human food, but also for forage and as green manure. Within the past few years the crop has become of special importance because of the large importations of beans, oil, and cake from Manchuria to Europe and America. The soy bean has a wide adaptation as to soil and climatic conditions, the northern limit being that of corn and the southern limit that of cotton. Rabbits are exceedingly fond of the young plants and sometimes cause serious injury where the plot is small, especially in semiarid regions. Although the soy bean is decidedly drought resistant, it is able to withstand a greater amount of moisture than corn or cowpeas. The soy bean is a valuable crop in many ways and has many points of superiority over the cowpea. As a forage it has higher value, the seed is easily harvested, and the seed is weevil proof. One of its most common uses is for hay, which is comparable to alfalfa and red clover in feeding value. The average yield of hay is about 2 tons to the acre. The soy bean is valuable as pasture for all kinds of stock, but especially profitable with hogs and sheep. As a soiling crop the soy bean is of value, yielding from 5 to 10 tons of green forage to the acre. Satisfactory results have been obtained by mixing soy beans and corn as ensilage, using three parts of corn to one part of soy beans. It is better to grow the two crops in separate fields and mix them in cutting. The soy bean is an excellent green-manure crop, greatly increasing the supply of humus and nitrogen in the soil. Excellent results have been obtained in feeding the grain as meal to dairy cows, substituting it for cottonseed meal or oil meal in the dairy ration. It is also a very profitable crop to grow for seed, as the supply seldom equals the demand. Under ordinary conditions the best varieties yield

from 20 to 30 bushels of seed to the acre. On account of its erect growth and uniform maturity the soy bean is easily harvested by machinery. As a food the soy bean may be used as a green vegetable, the dried beans used in baking or in soups, and, when roasted, as a substitute for coffee. Soy-bean flour or meal may be used as a constituent of muffins, bread, or, in fact, in any dish where corn meal is used. In addition to their forage and food value soy beans contain a valuable vegetable oil utilized in various industries.

INOCULATION.

Soy beans when well inoculated add much nitrogen to the soil. Natural inoculation occurs quite generally throughout the Southern States, the proper bacteria seeming to be widely distributed. In localities where this crop has not been previously grown, however, it is advisable to inoculate. The inoculation of a new field may be most certainly secured by applying soil from an old soy-bean field, using about 300 pounds of soil to the acre or dusting the seed with some of the soil.

CULTURE.

Soy beans succeed best on a thoroughly prepared seed bed. If the soil is low in fertility, an application of 300 pounds of acid phosphate and 100 pounds of muriate of potash to the acre or a dressing of stable manure will give the best results. As a rule, soy beans should be planted about the same time as corn. For seed production, planting in rows 30 to 48 inches apart is the best method, while for hay, soiling, or green manure a broadcasted or drilled crop furnishes a better quality of forage. Planted in rows, from 20 to 30 pounds of seed to the acre have been found satisfactory, and if broadcasted or drilled, from 60 to 90 pounds to the acre. An ordinary grain drill may be used in planting. By covering the feed cups not in use, different widths of rows can be adjusted. The cotton planter or corn planter can also be used to advantage. For small areas the ordinary grain drill does well. The planting should be shallow, not exceeding 2 inches in depth.

HARVESTING.

The matter of harvesting depends primarily on the use to be made of the crop. For hay, soy beans may be cut at any time from the setting of the seed until the leaves begin to turn yellow. The crop is best fitted for hay when the pods are well formed. When grown for grain alone, the cutting may be delayed in the case of most varieties until nearly all of the leaves have fallen. The harvesting can be done best by a mower with a bunching attachment or by a self-rake reaper. The early varieties can be harvested with

a bean harvester to advantage. The later and taller growing varieties can be satisfactorily harvested with a self-binder. If only a small area is grown, the plants may be cut with a sickle, or pulled, tied in bundles, and flailed out when thoroughly dry. In thrashing, the ordinary grain separator does very satisfactory work if run at moderate speed and some of the concaves are removed. Special thrashers for soy beans and cowpeas are now in the market and do excellent work.

VARIETIES.

At the present time there are about fifteen varieties of soy beans handled commercially by seedsmen. More than 500 distinct varieties are known and have been grown by the Department of Agriculture on its testing grounds. Several of these have proved very promising in various sections of the country and are now either on the market or ready for distribution. The varieties are largely distinguished by the color and size of seed, though they differ in maturity, habit of growth, etc. Variety is a matter of prime importance with the soy bean. Soy-bean seed should be selected with the idea of getting a variety suitable to the locality where it is to be grown, not growing the early varieties in the South nor the late ones in the North. Following are brief notes on the more important varieties:

Mammoth (seeds, straw yellow).—This is the standard commercial late variety, more extensively grown at the present time than any other. The Mammoth yields well and is satisfactory for both grain and forage. It can not be expected to mature north of Tennessee and Virginia.

Hollybrook (seeds, straw yellow).—A variety about two weeks earlier than the Mammoth, which can therefore be grown farther north. The seeds and plants are very nearly identical with those of the Mammoth. The Hollybrook is not especially desirable for hay, but is a good grain producer.

Ito San (seeds, straw yellow).—This variety is also called Yellow, Dwarf Yellow, Early Yellow, Medium Yellow, and Early White. It will mature in about 100 days and can be grown well in the Northern States. The Ito San is very satisfactory for forage and also produces a good yield of grain.

Guelph (seeds, green).—This variety is also known as Medium Green, Medium Early Green, and Large Medium Green. It is about two weeks later than the Ito San. The Guelph is grown to a considerable extent in the Northern States. It is esteemed for its forage, and although it gives a good yield of grain it shatters badly before all of the seed is mature.

Haberlandt (seeds, straw yellow).—This variety is about a week later than the Guelph. The *Haberlandt* is one of the most satisfactory varieties for grain production, but is not especially desirable for hay.

Medium Yellow (seeds, straw yellow).—This variety, sometimes sold as *Ito San* and *Hollybrook*, appears identical with the *Mongol* and the *Roosevelt*. It matures about the same time as the *Guelph* and is satisfactory both for hay and seed production.

Wilson (seeds, black).—This variety matures about the same time as the *Haberlandt*. It gives a good grain yield, but is most satisfactory for hay.

Peking (seeds, black).—This variety has small, flat seeds and matures in about 120 days. The *Peking* not only gives a good yield of grain, but is most excellent for hay.

Tokio (seeds, olive yellow).—This variety is about a week earlier than the *Mammoth*. The *Tokio* has rather a stocky growth for forage, but gives a heavy grain production.

Manchu (seeds, straw yellow).—An early variety obtained from northern Manchuria, maturing a few days earlier than the *Ito San*. The *Manchu* gives an excellent production of forage and seed, excelling the *Ito San* in both respects. Excellent results have been obtained with this variety in the Northern States.

Black Eyebrow (seeds, black and yellow).—An early variety obtained from Manchuria, maturing about the same as the *Manchu*. The *Black Eyebrow* is very satisfactory for both hay and seed production. It is most suitable as a grain variety for the Northern States.

Barchet (seeds, brown).—This variety requires rather a long season, maturing about 10 days later than the *Mammoth*. The *Barchet* makes a good growth, has fine stems, and is especially desirable for hay and green manure in the Gulf States.

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